

WHAT IS CLAIMED IS:

1. A method of controlling the rotational speed of a drive unit, comprising:
 - a first controlling device computing a first injection quantity;
 - a second controlling device computing a second injection quantity;
 - a third controlling device computing a third injection quantity;
 - setting one of said controlling devices to be dominant, said dominant controlling device controlling the rotational speed;
 - deactivating controlling devices that are not dominant;
 - determining a charge injection quantity from a charge definition;
 - comparing an injection quantity of the dominant controlling device with the charge injection quantity; and

as a function of the comparison, retaining the dominance of the dominant controlling device or setting the charge definition to be dominant for a power-determining signal.

2. The method of controlling the rotational speed according to Claim 1, wherein:

the first controlling device is an idling rotational speed controlling device, and the first injection quantity is an idling rotational speed injection quantity;

the second controlling device is a final rotational speed controlling device, and the second injection quantity is a final rotational speed injection quantity; and

the third controlling device is a starting rotational speed controlling device, and the third injection quantity is a starting rotational speed injection quantity.

3. The method of controlling the rotational speed according to Claim 2, wherein the idling rotational speed injection quantity and the final rotational speed injection quantity are filtered.

4. The method of controlling the rotational speed according to Claim 2, wherein the starting rotational speed controlling device is set to be dominant when existence of a starting condition is detected and the starting rotational speed injection quantity is larger than the charge injection quantity.

5. The method of controlling the rotational speed according to Claim 4, wherein when the starting rotational speed controlling device is set as dominant, dominance changes to the idling rotational speed controlling device when a starting end condition is detected and the starting rotational speed injection quantity is larger than or equal to the charge injection quantity.

6. The method of controlling the rotational speed according to Claim 4, wherein the charge definition is set as dominant when the charge injection quantity becomes larger than the starting rotational speed injection quantity and a starting end has not yet been detected.

7. The method of controlling the rotational speed according to Claim 6, wherein when the charge definition is set as dominant, dominance changes back to the starting rotational speed controlling device when the charge injection quantity becomes smaller than or equal to the starting rotational speed injection quantity and a starting end has not yet been detected.

8. The method of controlling the rotational speed according to Claim 7, wherein when the charge definition is set as dominant, dominance changes to the idling rotational speed controlling device when an actual rotational speed of the drive unit is lower than a first limit value.

9. The method of controlling the rotational speed according to Claim 8, wherein:

the first limit value is computed from a desired value of an idling rotational speed ($n_{LL}(SW)$) and a rotational speed derivative action; and

the rotational speed derivative action is determined substantially by a gradient of the actual rotational speed and a defined value.

10. The method of controlling the rotational speed according to Claim 8, wherein when the dominance is changed, an I-component of the idling rotational speed controlling device is initialized.

11. The method of controlling the rotational speed according to Claim 10, wherein:

the initialization value of the I-component is set to be constant or is significantly determined by the gradient of the actual rotational speed.

12. The method of controlling the rotational speed according to Claim 1, wherein:

when the idling rotational speed controlling device is set as dominant, dominance changes to the charge definition when the charge injection quantity becomes larger than the sum of the idling rotational speed injection quantity or the filtered idling rotational speed injection quantity, and a hysteresis value.

13. The method of controlling the rotational speed according to Claim 1, wherein:

when the charge definition is set as dominant, dominance changes to the final rotational speed controlling device when the actual rotational speed of the drive unit is higher than a second limit value.

14. The method of controlling the rotational speed according to Claim 13, wherein:

the second limit value is computed from a desired value of a final rotational speed and a rotational speed derivative action; and

the rotational speed derivative action is determined substantially by a

gradient of the actual rotational speed and a derivative action value.

15. The method of controlling the rotational speed according to Claim 13, wherein when the dominance is changed, an I-component of the final rotational speed controlling device is initialized.

16. The method of controlling the rotational speed according to Claim 15, wherein the initialization value of the I-component is determined substantially by a gradient of the actual rotational speed.

17. The method of controlling the rotational speed according to Claim 2, wherein:

when the final rotational speed controlling device is set at dominant, dominance changes to the charge definition when the charge injection quantity becomes smaller than the difference between the final rotational speed injection quantity or the filtered final rotational speed injection quantity minus the hysteresis value.

18. The method of controlling the rotational speed according to Claim 1, wherein:

the charge injection quantity is determined from a characteristic curve or characteristic diagram based on the charge definition and is filtered by means of a filter.